Paper No. 15

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte RICHARD A. FREEMAN

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Appeal No. 2000-0717
Application 08/906,676

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ON BRIEF

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Before KRASS, RUGGIERO, and BLANKENSHIP, Administrative Patent Judges.

KRASS, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the final rejection of claims 1-20, all of the pending claims.

The invention is directed to a phase locked loop filter having a tuned filter. Reference is made to representative independent claim 1, reproduced as follows:

1. A high frequency signal source comprising:

a voltage controlled oscillator for providing a high frequency source signal;

a divider coupled to the voltage controlled oscillator and receiving the source signal, the divider providing a divided high frequency signal; and

a phase locked filter including:

a first signal splitter having a source input, a first output, and a second output the source input being coupled to the divider to receive the divided high frequency signal;

a band pass filter having a signal input, a signal output, and a control input, the signal input being coupled to the first output, the band pass filter having a frequency response in accordance with a control signal at the control input;

a second signal splitter having a filter input, a third output, and a fourth output, the filter input being coupled to the signal output; and

a phase control circuit having a first phase input, a second phase input, and a phase output, the first phase input being coupled to the second output, the second phase input being coupled to the third output, the phase output being coupled to the control input.

The examiner relies on the following references:

Rogers, Jr. 4,316,108 Feb. 16, 1982

Claims 1-20 stand rejected under 35 U.S.C. 103 as unpatentable over Rogers.

Reference is made to the brief and answer for the

respective positions of appellant and the examiner.

OPINION

We REVERSE.

The initial burden of establishing a prima facie case of obviousness with regard to the claimed subject matter rests with the examiner.

The examiner maintains, with regard to instant claims 1-8 and 10-20, that the tracking filter shown in Figure 2 of Rogers discloses the instant claimed subject matter but for an integrator (low pass filter) placed after the phase comparator, and a frequency divider placed after the input signal source for reducing the frequency of the input signal source.

However, the examiner still contends that the claimed subject matter would have been obvious, within the meaning of 35 U.S.C. 103, because it was “notoriously well known” to use a low pass filter for cleaning high frequency noise and to use a frequency divider as a means for reducing frequency. Therefore, concludes the examiner, it would have been obvious

to place a low pass filter after phase comparator 32 of Rogers to remove noise and to place a frequency divider before the tracking filter of Rogers to reduce the frequency of the input signal to a predetermined frequency matched to the operating frequency of the tunable band pass filter 30.

Appellant does not deny that low pass filters for removing noise and frequency dividers for reducing the frequency of signals were known and we agree that such elements were known at the time of the instant invention. However, merely because such elements and their functions were known would not have provided a suggestion to skilled artisans to have provided these elements in the specific combination of elements claimed by appellant.

The examiner asserts the use of these elements to be "a matter of a design expedient for an engineer dependent upon a particular environment and the applications in which the tracking filter circuit of Roger [sic, Rogers], Jr. is to be used" [answer-page 5].

However, since Rogers is not concerned with high frequency signal sources or VHF synthesizers or a high frequency synthesizer, as is the instant invention, where the use of dividers for generating signals from a single VCO presents a noise problem, Rogers would appear to have had no need for the dividers and low pass filters which the examiner so cavalierly proclaims would have been a "design expedient." If Rogers suggested that the source signal frequency needed to be reduced or if Rogers suggested, or indicated, in any manner, that there was a need for filtering the output of the phase comparator 32 or that there was a problem with noise regarding the signal output by the phase comparator, then we would agree with the examiner that the skilled artisan would have known to employ a divider and/or a low pass filter, respectively, at the appropriate points in the circuit to alleviate these problems. But, in fact, Rogers does not indicate that there is a problem with high frequencies at the source input or that there is a noise problem with the signal output from the phase comparator. In fact, appellant has argued that because Rogers teaches the use of a real-time

tracking filter in the intermediate frequency (IF) stage of a frequency modulation (FM) receiver, the use of a divider would be “counter-productive” [brief-page 8] since Rogers’ tracking filter involves the rapid tracking of continuously frequency-varying input signals, the frequency variation being independent of the system in which the filter is used.

The examiner’s response, unconvincing to us, is to merely contend that Rogers does not employ a frequency divider because the frequency of the input signal from source 30 is matched
with the operating frequency of the tunable band pass filter 30 and so the use of a frequency divider for matching the input
frequency to the operating frequency of the tunable band pass

filter is considered to be a matter of design expedient for an engineer.

Taking independent claim 1 as exemplary, and applying Rogers’ disclosure, at Figure 2, thereto, we find that Rogers does, indeed, disclose a phase locked filter comprising a

first signal splitter 29 which has an input from a source and a first and second output. A bandpass filter 30 has a signal input, a signal output and a control input, wherein the signal input is coupled to the first output of the first signal splitter and the response of the band pass filter is in accordance with a control signal (provided by phase comparator 32 and control amplifier 33). A second signal splitter 31 has a filter input and a third output, wherein the filter input is coupled to the signal output of the bandpass filter. However, we do not find the "fourth output," as required by the instant claim. Rogers also discloses a phase control circuit 32 having a first phase input, a second phase input and a phase output, wherein the first phase input is coupled to the second output (of the first signal splitter 29), the second phase input is coupled to the third output (of the second signal splitter 31) and the phase output is coupled to the control input (to bandpass filter 30).

Independent claims 10 and 18 do not require the "fourth output" of independent claim 1. However, each of the

independent claims does require a high frequency source and a divider for receiving the high frequency source signal. Since we find no such teaching or suggestion of a high frequency source signal and a divider connected thereto in Rogers, and the examiner has not convinced us of the obviousness of providing such a high frequency source and divider in Rogers, we will not sustain the rejection of claims 1-20 under 35 U.S.C. 103.

The examiner's decision is reversed.

REVERSED

ERROL A. KRASS Administrative Patent Judge	)
JOSEPH F. RUGGIERO Administrative Patent Judge	) BOARD OF PATENT) APPEALS AND) INTERFERENCES
HOWARD B. BLANKENSHIP Administrative Patent Judge	)

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